Application

for

United States Letters Patent

To all whom it may concern:

Be it known that,

Tatsuo TAKAOKA

have invented certain new and useful improvements in

METHOD AND APPARATUS FOR EFFECTIVELY
CONTROLLING USE OF SPECIFIC COMMUNICATIONS SERVICE

of which the following is a full, clear and exact description:

TITLE

METHOD AND APPARATUS FOR EFFECTIVELY CONTROLLING USE OF SPECIFIC COMMUNICATIONS SERVICE

FiIELD

5   This patent specification relates to a method and apparatus for

communications, and more particularly to a method and apparatus for

communications that effectively control the use of specific communications

services.

RELATED TECHNOLOGY

10   Communications terminals such as facsimile machines typically are

configured to be compatible with services provided by a plurality of

communication service carriers.   But, in some cases, the communications

terminals cannot perform a communications operation using specific

communications services with a regular setting of conditions.

15   Since it is an option for a user to select the communications service

carriers and the communications services to use for a communications terminal,

an appropriate setting is required of conditions which are suitable for the

selected communications service carriers and for the selected communications

services.

20   For example, a service profile identifier (SPID) which is used in the

communications system in the United States of America is an identification

required for a communications terminal to send when the communications

terminal performs a call connection to use a specific communications service.

For such a purpose, the communications terminal is generally provided

with selectively usable settings of conditions suitable for a variety of

communications services and carriers.   When the user selects the

communications service to use on a communications terminal, the user needs

to change the setting of conditions to a suitable one.

For example, a communications terminal connected to an ISDN

(integrated services digital network) is classified according to its attribute as a

Group 4 facsimile machine or a digital telephone machine.

It is possible that a facsimile machine uses a plurality of different

communications services provided by different communications service

providers or a single provider.

The ISDN notifies a call-disconnection-cause such as Aa called

terminal is busy" or "a called number is incorrect" in a form of a CPS (call

processing signal) code to a communications terminal.

When a communications terminal receives a call-disconnection-cause

code which is not readable by human, if the contents of the cause should be

understandable by the user, the communications terminal converts the contents

into a human-readable message, such as "a called terminal is busy," "a called

number is incorrect," and so on, and displays these messages to the user.

But, if the contents of the cause are not understandable by the user, or if the

cause is one that rarely occurs or if the cause is of unusual nature, the communications terminal can merely display a number corresponding to the cause to the user. In a typical communications procedure (i.e., X.25, X.21, and Q.931), the communications terminal converts a call-disconnection-cause code

5   notified from the network side into a message that it displays to the user.

In order to provide such a message display to the user, the communications terminal needs the proper setting of the conditions suitable for the specific communications services used. That is, when the communications terminal does not have the proper setting for the specific communications

10   services used, the communications terminal will typically lose the call connection and receive a cause code which may not be reliable or understandable to the user. Thereby, the user will receive a notification based on such an unreliable cause or incomprehensible message, which accordingly typically increases the number of inquiries about this trouble from the users to

15   the manufacturer of the communications terminal or to the service provider.

SUMMARY

This patent specification describes a novel communications terminal connected to at least one of a telephone line and a local area network. In one example, a novel communications terminal includes a first memory, a second

20   memory, a detector, and an indicating or display mechanism. The first memory stores service information including availability information representing

availability of a specific communications service provided by a service provider through at least one of a telephone line and a local area network and condition information suitable for the specific communications service. The second memory stores message information indicating that the specific

5   communications service is not usable. The first and second memories (and all other memories referred to below) can be implemented as any suitable information storage device(s) that can function to store the two or more different kinds of information, and need not be physically separate or even separable devices. The detector is configured to detect whether the service information

10   stored in the first memory is appropriate each time the communications terminal starts a call connection operation that would use the specific communications service based on the condition information. The indicating mechanism is configured to read the first memory and to indicate the message information indicating that the specific communications service is not usable when the

15   detector detects that the service information stored in the first memory is inappropriate.

The above-mentioned facsimile apparatus further includes a third memory which stores guidance information that may help make usable a specific communications service that may have been found not to be usable.

20   In this case, the indicating mechanism is further configured to read the third memory and to indicate the guidance information upon a predetermined input for starting a guidance indication operation after the indicating mechanism

indicates the message information indicating that the specific communications service is not usable.

The above-mentioned communications terminal further includes in the third memory guidance information that may help overcome the unavailability of a specific communications service.   In this case, the indicating mechanism is further configured to read the third memory and to indicate the guidance information after a predetermined time has elapsed from the indicating mechanism indicating the message information to the effect that the specific communications service is not available or usable.

· The second memory may further store guidance information for guiding a way to overcome the unavailability of a specific communications service that is not usable or available and the indicating mechanism indicates the message information indicating that the specific communications service is not usable and the guidance information when the detector detects that the service information stored in the first memory is inappropriate.

The indicating mechanism may indicate the message information and the guidance information through a display.

The indicating mechanism may send the message information and the guidance information to a sound mechanism so as to output the message information and the guidance information as a voice message or display, or to a printing apparatus so as to output the message information and the guidance information on a recording sheet and/or as a visual display in some other form.

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This disclosure further describes a novel method of using a specific

communications service provided by a service provider.   In one example, a

novel method includes the steps of providing a first storing step, detecting,

reading, and indicating.   The providing step provides service information

5   including availability information representing availability of the specific

communications service on a communications terminal connected to at least

one of a telephone line and a local area network and condition information

suitable for the specific communications service.   The first storing step stores

message information indicating if the specific communications service is not

10   usable.   The detecting step detects whether the service information provided in

the providing step is appropriate each time a call connection operation is

started on the communications terminal to use the specific communications

service based on the condition information.   The reading step reads the service

information.   The indicating step indicates that the specific communications

15   service is not usable when the detecting step detects that the service

information provided in the providing step is inappropriate.

This patent specification further describes a novel computer readable

medium which stores computer instructions for performing the steps recited in

the above-mentioned novel method.

20   **BRIEF DESCRIPTION OF THE DRAWINGS**

A more complete appreciation of the present disclosure and many of

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the attendant advantages thereof will be readily obtained as the same becomes

better understood by reference to the following detailed description when

considered in connection with the accompanying drawings, wherein:

Fig. 1 is a schematic block diagram of a facsimile apparatus;

Fig. 2 is an illustration showing a display panel unit of the facsimile

apparatus of Fig. 1;

Fig. 3 is an example of a specific service registration table used in the

facsimile apparatus of Fig. 1;

Fig. 4 is an example of a code/number reference table used in the

facsimile apparatus of Fig. 1;

Fig. 5 is an example of a number/contents reference table used in the

facsimile apparatus of Fig. 1;

Fig. 6 is an example of a number/guidance reference table used in the

facsimile apparatus of Fig. 1;

Figs. 7A and 7B are flowcharts for explaining a call connection

operation performed by the facsimile apparatus of Fig. 1;

Fig. 8 is an example of an indication provided when a specific service is

not available during the call connection operation requiring the specific service;

Fig. 9 is an example of a number/voice reference table used in the

facsimile apparatus of Fig. 1;

Figs. 10 and 11 are flowcharts for explaining exemplary operations for

notifying the user of information regarding guidance;

Fig. 12 is another example of an indication indicated to notify the user

of the guidance for solving a problem;

Fig. 12 is an example of a number/contents and guidance reference

table used in the facsimile apparatus of Fig. 1;

5   Fig. 14 is a flowchart for explaining an alternative call disconnection

operation to that of Fig. 7B;

Fig. 15 is a flowchart for explaining an exemplary operation for notifying

the user of the information of the contents and the guidance;

Fig. 16 is another example of an indication indicated to notify the user

10   of the information of the notification contents and the guidance for solving the

problem;

Fig. 17 is a flowchart for explaining an operation for generating an error

report as another exemplary operation for notifying the user of the information

of the contents and the guidance; and

15   Fig. 18 is an example of the error report generated through the

operation of Fig. 17.

DETAILED DESCRIPTION

In describing preferred embodiments illustrated in the drawings, specific

terminology is employed for the sake of clarity.   However, the disclosure herein

20   is not intended to be limited to the specific terminology so selected and it is to

be understood that each specific element includes all technical equivalents that

operate in a similar manner or achieve similar results, including elements

developed after the filing date hereof.

Referring now to the drawings, wherein like reference numeral

designate identical or corresponding parts throughout the several views,

5   particularly to Fig. 1, a facsimile apparatus 1 according to an embodiment of the

present invention is described.   Fig. 1 shows a block diagram of the facsimile

apparatus 1 which includes a system controller 2, a ROM 3, a RAM 4, a

scanner 5, a printer 6, an EEPROM (electrically erasable programmable ROM)

7, an image memory 8, a display panel unit 9, an encoding/decoding unit 10, a

10   Modem 11, a network controller 12, and an internal bus 13.

The system controller 2 controls the operations of the facsimile

apparatus 1, including a facsimile data transmission control for transmitting and

receiving image information and arbitrary data files according to a predefined

communications procedure (i.e., a Group-3 facsimile communications

15   procedure).   The ROM (read only memory) 3 includes an electrically

reprogrammable read only memory (i.e., a flash ROM) and stores control (or

application) programs to be executed by the system controller 2 and a plurality

of lookup tables used when executing the control programs.   The lookup tables

in the ROM 3 include a font table 3a, as shown in Fig. 1.   When the system

20   controller 2 converts a row of characters into image information, it uses font

information stored in the font table 3a.   Other lookup tables are explained later.

The RAM (random access memory) 4 of Fig. 1 includes a working

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memory area reserved for use by the system controller 2. The scanner 5 reads

an image of a document at one of predetermined image reading resolutions

(i.e., 3.85 lines per mm, 7.7 lines per mm, 15.4 lines per mm, etc.). The printer

6 produces an image output at a predefined print resolution in accordance with

5   the predetermined image reading resolution, based on image data obtained

either through a facsimile receiving operation or a scanning operation with the

scanner 5. The printer 6 records image information, received from other

facsimile machines or scanned by the scanner 5, on a recording sheet in

accordance with a linear density of the image information.

10   The EEPROM 7 is an electrically reprogrammable read-only memory

for storing various parameters necessary for operations of the facsimile

apparatus 1, even when the main power of the facsimile apparatus 1 is turned

off. The image memory 8 temporarily stores image information to be

transmitted to and which are sent from other facsimile terminals, and is used for

15   a bitmapping of image information each time various kinds of facsimile reports,

explained later, are generated.

The display panel unit 9 includes various kinds of operational keys and

a display that serves as an interface between an operator and the facsimile

apparatus 1, as explained later. The encoding/decoding unit 10 encodes

20   image information to be transmitted to other facsimile terminals such that the

information is compressed. Also, the encoding/decoding unit 11 decodes the

compressed image information that is transmitted from other facsimile terminals

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back into original image information. For these compression and

decompression operations, the encoding/decoding unit 11 uses various

compression and decompression methods such as MH (modified Huffman), MR

(modified READ), and MMR (modified modified READ) methods conformable to

5   requirements of the Group 3 facsimile communications procedure.

The Modem 11 is preferably a Group 3 facsimile modem that performs

the functions of a modem for the Group 3 facsimile machine. More specifically,

the modem 11 modulates a data signal to be transmitted to other facsimile

machines and it converts a modulated data signal received from other facsimile

10   machines back into an original data signal which is unmodulated. Also, the

modem 11 produces a DTMF (dial tone multi-frequency) signal having a dial

tone in response to a telephone number entered by an operator and sends the

signal to other facsimile machines. In addition, the modem 11 has a feature of

a low-speed modem such as a V.21 modem for transmitting and receiving

15   communication protocols and a feature of a high-speed modem such as V.17,

V.34, V.29, or V.27ter modems for mainly transmitting and receiving image

information.

The network controller 12 is connected to an outside line such as a

public switched telephone network (PSTN), and has a direct internal connection

20   to the Modem 11. The network controller 12 includes an automatic transmitting

and receiving function, and controls the connection of the facsimile apparatus 1

to various telephone networks such as the PSTN. More specifically, when the

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facsimile apparatus 1 is connected to the PSTN, the network controller 12

performs a variety of functions including controls of connection and

disconnection of the line by forming a direct current loop through the line.   The

functions of the network controller 12 further include controls related to the

5   connection to the line such as detection of an event in that a polarity of the line

is reversed, disconnection of the line, dialing tones, tone signals such as a busy

tone, and a calling signal.   In addition, the network controller 12 generates

dialing pulses.

When the facsimile apparatus 1 is connected to an integrated services

10   digital network (ISDN), the network controller 12 controls the connection to the

ISDN.   When the facsimile apparatus 1 is connected to a local area network

(LAN), the network controller 12 controls the connection to the LAN.   When the

facsimile apparatus 1 is connected to a certain network using a dial-up

connection, the network controller 12 controls a dial-up connection in

15   accordance with a control function of this network.

The above-described various units of the facsimile apparatus 1

communicate with each other through the respective connections to the internal

bus 13, as shown in Fig. 1.

Referring to Fig. 2, details of the display panel unit 9 is explained.   The

20   display panel unit 9 includes various components such as a ten-key pad 9a, a

YES key 9b, a NO key 9c, a STOP key 9d, a START key 9e, a FUNCTION key

9f, a cursor-key pad 9g including a LEFT key 9gl, a RIGHT 9gr, an UP key 9gu,

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and a DOWN key 9gd, an LCD (liquid crystal display) 9h, and a HELP key 9i.

The ten-key pad 9a enters a numeric code representing, for example, a facsimile number of a destination facsimile machine. The YES and NO keys 9b and 9c respectively enter a user determination at each selection step throughout various operational procedures. The STOP key 9d enters an instruction for stopping an action. The START key 9e enters instructions for starting facsimile communications operations and a copying operation.

The FUNCTION key 9f calls up a variety of functions by entering a numeric code through the ten-key pad 9a after pressing the FUNCTION key 9f. Using the FUNCTION key 9f, the user can perform facsimile number registrations for a one-touch-dialing operation and for a short-dialing operation, and an entry of user parameters. Further, the user can perform non-standard enhanced functions such as a transmission operation to be performed at a designated time, a transmission operation which requires an entry of a sender code, a polling operation, and so forth.

The UP key 9gu and the DOWN key 9gd of the cursor-key pad 9g respectively change the position of the cursor shown in the LCD 9h or the contents of the LCD 9h, or scroll the contents of the LCD 9h up and down. The LEFT key 9gl and the RIGHT key 9gr of the cursor-key pad 9g respectively selects one of subjects or functions shown in the LCD 9h. The LCD 9h indicates various kinds of information such as information of operational statuses, a variety of messages to an operator, and so forth. The HELP key 9i

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activates a guidance operation for indicating various kinds of guidance messages corresponding to an operation under processed.

The facsimile apparatus 1 of Fig. 1 is able to use various kinds of communications services provided by the network (i.e., the ISDN) to which the network controller 12 of the facsimile apparatus 1 is connected. In this example being explained, the network controller 12 is connected to the ISDN, as shown in Fig. 1. In order to use the communications services, the facsimile apparatus 1 may need to perform the communications operation differently from regular communications services. For example, the facsimile apparatus 1 may need to send specific ID (identification) information to the ISDN at a calling process. For this purpose, the facsimile apparatus 1 is configured to have a specific service registration table 7a, as shown in Fig. 3, in the EEPROM 7. The specific service registration table 7a is previously input into the EEPROM 7 with the display panel unit 9 through an interactive input operation, for example.

The specific service registration table 7a of Fig. 3 includes a plurality of the communications services which can be used by the facsimile apparatus 1 and which are referred to as specific services 1, 2, 3, and so on. In the specific service registration table 7a, each of the specific communications services is provided with three kinds of information, as shown in Fig. 3. First information relates to availability of the corresponding specific communications service, which indicates whether the facsimile apparatus 1 can use this specific communications service. Second information provides pertinent information

which includes an ID number, for example, reserved for use of the corresponding specific communications services. The pertinent information is registered in a form such as information 1, 2, 3, and so on. Third information contains a dummy call-disconnection-cause code representing a cause of disconnection due to the registration of incorrect pertinent information.

In the example of Fig. 3, the specific communications services 1 is given "available" in the availability information, and the information 1 of the pertinent information needs to be correct. The above-mentioned dummy call-disconnection-cause codes for incorrect pertinent information may be stored in the ROM 3 as long as these codes are appropriately linked to the respective specific communications services, since they are fixed codes for the system.

The cause of a call disconnection is normally notified from the network (i.e., the ISDN) with a code of CPS (call processing signal) which code is called the call-disconnection-cause code. In this example, however, incorrect pertinent information which is an internal problem and leads to a call disconnection is also handled as a cause of a call disconnection. Such a call-disconnection caused by incorrect pertinent information is notified by the facsimile apparatus 1 itself with a code of a call disconnection. In order to distinguish the case of the call-disconnection caused by incorrect pertinent information from the common call-disconnection-cause code sent from the network (i.e., the ISDN), the code is referred to as a dummy call-disconnection-cause code.

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For example, when the information 1 related to the specific

communications service 1 is incorrect, the network controller 12 judges that a

call-disconnection is caused, wherein the call-disconnection is represented by a

call-disconnection-cause code 0xf3.   Thereby, such a call connection error

caused by the incorrect pertinent information can be treated in a manner similar

to those call connection errors caused by common call-disconnection causes,

such as "a called terminal is busy," "a call number is incorrect," and so on,

notified from the network (i.e., the ISDN).

The facsimile apparatus 1 is also provided with a code/number

reference table 3b of Fig. 4, which is stored in the ROM 3.   As shown in Fig. 4,

the code/number reference table 3b includes code information representing a

plurality of the call-disconnection-cause codes such as 11, 12, 13, and so on

sent from the network (i.e., the ISDN) and a plurality of the dummy call-

disconnection-cause codes such as N1, N2, N3, and so on generated by the

facsimile apparatus 1 itself.   The code/number reference table 3b further

includes number information representing notification numbers corresponding to

the code information on a one-to-one basis, as shown in Fig. 4.   Some call-

disconnection-cause codes are associated with the same notification number.

For example, the codes 12 and 13 correspond to the notification number 3.

This is because in some cases different call-disconnection-cause codes

possibly represent the same call-disconnection-cause such as "the called party

is busy," for example.

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The facsimile apparatus 1 is also provided with a number/contents

reference table 3c of Fig. 5, which is stored in the ROM 3.   As shown in Fig. 5,

the number/contents reference table 3c includes contents information

associated with the notification numbers on a one-to-one basis.   The contents

5   information includes a row of characters representing messages.   For example,

to the notification numbers related to the disconnection codes which are notified

from the network (i.e., the ISDN), the notification contents provides a message

such as "a called number is incorrect" for the notification number 1, "a called

terminal is busy" for the notification number 2, and so forth.

10   The notification numbers related to the dummy disconnection codes,

which are notified by the facsimile apparatus 1 itself, lead to corresponding

contents information that indicates non-availability of the corresponding specific

service.   In this case, the corresponding specific service becomes not available

due to incorrectness of the corresponding pertinent information.   Accordingly,

15   as shown in Fig. 5, the character row of the contents information assigned to

the notification number N1, for example, indicates a message that "AAA service

is not available" and the one assigned to the notification number N2, for another

example, indicates a message that "BBB service is not available."   As

described above, these specific services appeared in the number/contents

20   reference table 3c of Fig. 5 are registered in the specific service registration

table 7a of Fig. 3 linked to the number/contents reference table 3c of Fig. 5 via

the code/number reference table 3b of Fig. 4.

The facsimile apparatus 1 is further provided with a number/guidance reference table 3d of Fig. 6, which is stored in the ROM 3. As shown in Fig. 6, the number/guidance reference table 3d includes guidance information associated with the notification numbers for the dummy call-disconnection-cause code on a one-to-one basis.

The guidance information indicates an appropriate guidance corresponding to the specific service which is not available due to incorrectness of the corresponding pertinent information. For example, the character row of the guidance information assigned to the notification number N1 indicates a message "Please check if XXX is properly registered" and the one assigned to the notification number N2 indicates a message "Please check if YYY is properly registered," as shown in Fig. 6. As described above, these specific services appeared in the number/guidance reference table 3d are registered in the specific service registration table 7a which is linked to the number/guidance reference table 3d via the code/number reference table 3b.

Next, an exemplary procedure of a call connection operation performed by the facsimile apparatus 1 of Fig. 1 is explained with reference to Figs. 7A and 7B. As shown in Fig. 7A, the system controller 2 reads the information registered in the availability column of the specific service registration table 7a, in Step S101, and checks which specific service is registered as available in the specific service registration table 7a, in Step S102. If the system controller 2 reads no specific service registered as available in the specific service

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registration table 7a and the check result of Step S102 is NO, the system

controller 2 determines that the facsimile apparatus 1 use no specific

communications service and, in Step S103, performs the call operation which is

a general communications service.   Then, the system controller 2 checks if the

5   call operation is properly performed.   If the call operation is properly performed

and the check result of Step S104 is YES, the system controller 2 proceeds to

the communications procedure.

If the call operation is not properly performed and the check result of

Step S104 is NO, the system controller 2 stores the general call-disconnection-

10   cause then notified from the ISDN, in Step S105.   Then, the process proceeds

to a call disconnection process in Step S201 (Fig. 7B), explained later.

If the system controller 2 reads a specific service registered as

available in the specific service registration table 7a and the check result of

Step S102 is YES, the system controller 2 determines that the facsimile

15   apparatus 1 can use that specific communications service.   The system

controller 2 further checks in Step S106 if the pertinent information

corresponding to the available specific service exists in the pertinent information

column of the specific service registration table 7a.   At this time, the system

controller 2 does not check if the contents of the pertinent information are

20   appropriate.

If no pertinent information corresponding to the available specific

service exists, regardless of its contents, and the check result of Step S106 is

NO, the system controller 2 determines that a specific service registration error has occurred. In this case, the system controller 2 reads and stores the corresponding call-disconnection-cause code registered in the specific service registration table 7a, in Step S111, and proceeds to the call disconnection process in Step S201 (Fig. 7B).

If the system controller 12 reads that the pertinent information exists, regardless of its contents, and the check result of Step S106 is YES, the process proceeds to Step S107 in which the system controller 2 performs the call operation for the available specific service and sends necessary information from the pertinent information to the ISDN. In Step S108, the system controller 2 checks if the call operation for the available specific service is properly completed. If the call operation for the available specific service is properly completed and the check result of Step S108 is YES, the process proceeds to the call disconnection process of Step S201 (Fig. 7B).

If the call operation for the available specific service is not properly completed and the check result of Step S108 is NO, the process proceeds to Step S109 in which the system controller 2 further checks if the cause of the improperly-completed call operation is incorrectness of the corresponding pertinent information. If the cause of the improperly-completed call operation is incorrectness of the pertinent information and the check result of Step S109 is YES, the proceeds to Step S111 in which the system controller 2 reads and stores the corresponding dummy code of the self-notification call-disconnection-

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cause registered in the specific service registration table 7a.   Then, the

process proceeds to the call-disconnection process in Step S201 (Fig. 7B).

If the cause of the improperly-completed call operation is not

incorrectness of the pertinent information and the check result of Step S109 is

5   NO, the process proceeds to Step S110.   In this case, the system controller 2

determines that the error is the common call-disconnection.   Therefore, in Step

S110, the system controller 2 reads and stores the common call-disconnection-

cause code notified from the ISDN.   Then, the process proceeds to the call-

disconnection process in Step S201 of Fig. 7B.

10   In this example being explained, the cases in which the corresponding

pertinent information is not registered and in which the corresponding pertinent

information is incorrectly registered are commonly represented by a single call-

disconnection-cause code.   However, these two cases may be represented by

different call-disconnection-cause codes so that more detailed care can be

15   taken against an error caused by the self-notification call-disconnection-cause.

Accordingly, registration of the notification numbers, the contents of notification,

and the guidance information need to be different for these two cases.

In Step S201 of Fig. 7B, the system controller 2 performs the call-

disconnection operation.   In Step S202, the system controller 2 reads and

20   specifies the notification number in the code/number reference table 3b

corresponding to the call-disconnection-cause code stored in Step S105, S110,

or S111 of Fig. 7A.   In Step S203, the system controller 2 reads and specifies

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the contents of the notification in the number/contents reference table 3c

corresponding to the notification number specified in Step S202.   In Step S204,

the system controller 2 arranges to indicate the contents of the notification,

specified in Step S203, with the LCD 9h.

5   An exemplary indication with the LCD 9h in Step S204 for a case of the

self-notification call-disconnection-cause is shown in Fig. 8.   As shown, the

indication indicates that the XXX service is not available, wherein the XXX

service is the specified specific service.   As an alternative to this indication with

the LCD 9h in Step S204, the message may be printed on the recording sheet

10   with the printer 6 or may be transformed into a voice message.   To use the

voice message, the number/voice reference table 3c may be replaced with a

number/voice reference table 3e in the ROM 3.   As shown in Fig. 9, the

number/voice reference table 3e includes voice data representing a message

corresponding to each of the notification number registered in the

15   number/contents reference table 3c.   When a voice message is specified, it is

subjected to a digital-to-analog conversion and a resultant analog signal is input

into a loud speaker (not shown) so that the message is output.

          After Step S204 of Fig. 7B, the system controller 2 checks in Step S205

if the call-disconnection-cause code is the self-notification type call-

20   disconnection-cause code.   If the call-disconnection-cause code is not the self-

notification type call-disconnection-cause code but is the one sent from the

ISDN and the check result of Step S205 is NO, the process ends.   If the call-

disconnection-cause code is the self-notification type call-disconnection-cause

code and the check result of Step S205 is YES, the process proceeds to Step

S206 in which the system controller 2 reads and specifies the guidance

information in the number/guidance reference table 3d corresponding to the

5   notification number specified in Step S202.   After that, the system controller 2

performs notification of the guidance information in Step S207, and the process

then ends.

Fig. 10 shows an exemplary procedure of the guidance operation

performed in Step S207.   As shown in Fig. 10, the system controller 2 checks

10   in Step S301 if the HELP key 9i is pressed.   Since Step 301 forms a NO loop,

the process proceeds to the next step when the HELP key 9i is pressed.   In

Step S302, the system controller 2 arranges to indicate the guidance

information specified in Step S206 with the LCD 9h.   Then, the guidance

operation ends.

15   Fig. 11 shows another exemplary procedure of the guidance operation

performed in Step S207.   As shown in Fig. 11, the system controller 2 waits a

predetermined time period (i.e., a 5-second time period) in Step S401.   In Step

S402, the system controller 2 arranges to indicate the guidance information

specified in Step S206 with the LCD 9h.   Then, the guidance operation ends.

20   An example of the indication performed in Step S302 of Fig. 10 or S402

of Fig. 11 is shown in Fig. 12.   With such an indication, the facsimile apparatus

1 can inform the user of a way to use the specific service which is presently

unusable due to the problem that the pertinent information is not registered or is incorrect. In Step S207 of Fig. 7B, the indication of the guidance information with the LCD 9h may alternatively be changed to a printing of the guidance information with the printer 6, or a voice message of the guidance information.

As an alternative, a number/contents and guidance reference table 3f of Fig. 13 may be used in place of the number/contents reference table 3c of Fig. 5 and the number/guidance reference table 3d of Fig. 6. In this case, the procedure of Fig. 7B is changed to that shown in Fig. 14.

That is, the number/contents and guidance reference table 3f of Fig. 13 combines the number/contents reference table 3c of Fig. 5 and the number/guidance reference table 3d of Fig. 6, with which the system controller 2 can increase the efficiency of reading the required information.

In Step S501 of Fig. 14, the system controller 2 performs the call-disconnection operation. In Step S502, the system controller 2 reads and specifies the notification number in the code/number reference table 3b corresponding to the call-disconnection-cause code stored in Step S105, S110, or S111 of Fig. 7A. In Step S503, the system controller 2 checks if the call-disconnection-cause code is the self-notification type call-disconnection-cause code. If the call-disconnection-cause code is not the self-notification type call-disconnection-cause code but is the one sent from the ISDN and the check result of Step S205 is NO, the process proceeds to Step S504. In Step S504, the system controller 2 reads and specifies the contents of the notification in the

number/contents and guidance reference table 3f corresponding to the

notification number specified in Step S502.   In this case, there is no

corresponding guidance information.   In Step S505, the system controller 2

arranges to indicate the contents of the notification, specified in Step S504, with

5   the LCD 9h.   Then, the process ends.

The indication of the guidance information with the LCD 9h performed

in Step S505 may alternatively be changed to a printing of the guidance

information with the printer 6, or a voice message of the guidance information.

If the call-disconnection-cause code is the self-notification type call-

10   disconnection-cause code and the check result of Step S503 is YES, the

process proceeds to Step S506 in which the system controller 2 reads and

specifies the contents and the guidance in the number/contents and guidance

reference table 3f corresponding to the notification number specified in Step

S502.   After that, the system controller 2 performs notification of the contents

15   and the guidance in Step S507, and the process then ends.

Referring to Fig. 15, an exemplary procedure of the notification of the

contents and the guidance performed in Step S507 is explained.   In Step

S601, the system controller 2 arranges the indication of the contents and the

guidance, specified in Step S506, with the LCD 9h.   In this case, the LCD 9h

20   indicates the contents and the guidance in a manner as shown in Fig. 16, for

example.   With such an indication, the facsimile apparatus 1 can inform the

user what specific service is presently unusable due to the problem in that the

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pertinent information is not registered or incorrect and a way how the user can solve the problem to use that specific service.

Fig. 17 shows another exemplary procedure of the notification of the contents and the guidance performed in Step S507.   In Step S701 of Fig. 17, the system controller 2 extends in the image memory 8 the image data of the error report containing the information of the contents and the guidance specified in Step S506 of Fig. 14, using the font table 3a, so as to generate a bit-mapped image of the error report.   Then, the system controller 2 instructs the printer 6 to print the error report, in Step S702.   The process then end.

With this operation, the facsimile apparatus 1 can inform the user what specific service is presently unusable due to the problem in that the pertinent information is not registered or incorrect and a way how the user can solve the problem to use that specific service.   Furthermore, such a printed error report can remind the user of the problem in that the specific service cannot be used.

The notification of the contents and the guidance in Step S505 may be performed with a voice message.   Thereby, the user can recognize the notification of the contents and the guidance without having to pay attention to the LCD 9h.

In this way, the facsimile apparatus 1 can inform the user what specific service is presently unusable due to the problem that the pertinent information is not registered or incorrect.   Furthermore, the facsimile apparatus 1 can show the user a way to solve the problem of using that specific service so that the

user can try to solve the problem alone.   Thereby, the number of inquires from the users about troubles with the communications services may be decreased.

In the above-described exemplary embodiment, the facsimile apparatus 1 is connected to the ISDN as an example of a communications network.

5   However, the present disclosure is not limited to it but is also applicable to a case where the facsimile apparatus 1 is connected to other networks such as a public switched telephone network (PSTN), a local area network (LAN), or the like.

Numerous additional modifications and variations of the present

10   disclosure are possible in light of the above teachings.   It is therefore to be understood that within the scope of the appended claims, the system and method disclosed therein may be practiced otherwise than as specifically described herein.

This application claims priority to Japanese patent application No.

15   JPAP11-372147 filed on December 28, 1999 in the Japanese Patent Office, the entire contents of which are hereby incorporated by reference.